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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,506	07/16/2004	Ta-Shuang Kuan	NAUP0588USA	4505

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EXAMINER

CHIEN, LUCY P

ART UNIT PAPER NUMBER

2871

DATE MAILED: 07/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/710,506

Applicant(s)

KUAN ET AL.

Examiner

Lucy P. Chien

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group A, Group B, and Group C Species in the reply filed on 4/20/2006 is acknowledged.

Examiner withdraws restriction. Examiner will examine all claims.

Response to Arguments

Applicant's arguments with respect to claim 1-34 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1-7,18-23,31-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al (US 6727967) and of Koike (US 20040150777) in view of Lu (US 20050122464).

Regarding Claim 1,18,31-36

Nakamura et al discloses (Fig. 18) a glass substrate (13) having a plurality of pixels arranged in a pixel array, a transparent substrate (14) positioned above the glass substrate (13), the transparent substrate (14) having a top surface and a bottom

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surface. A liquid crystal layer (15) positioned between the transparent substrate and the glass substrate. Color filters (72) positioned below the glass substrate (13). It would have been obvious to have the color filters (72) positioned on top of the transparent substrate (14) to alleviate the parallax due to the thickness of the substrate (Column 16, rows 51-63).

Nakamura et al does not disclose the use of micro color filters or a silicon substrate.

Koike discloses (Figure 13) a silicon substrate (1) having a plurality of pixels arranged in a pixel array thereon, each of the pixels comprising a plurality of subpixels, and a plurality of micro color filters (37R,37G,37B) ,each of the micro color filters being positioned corresponding one of the subpixels (shown in Figure 11 and Figure 12 which are the same embodiment as Figure 13). The coarseness of image display may be eliminated when a high-resolution liquid crystal display device is configured to provide a fine image display (page 1, [0012-0013]).

Lu (Page 1, [0002]) discloses the use of LCOS which uses a silicon substrate to provide a high aperture ratio, high resolution, small size, and highly integrated nature display.

It would have been obvious to one of ordinary skilled in the art to modify Nakamura et al's display to include Kioke's micro color filters motivated by the desire to provide a fine image display (page 1, [0012-0013]) to also include Lu's silicon substrate to provide a high aperture ratio, high resolution, small size, and highly integrated nature display (Page 1, [0002]).

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Regarding Claim 2,19.

In addition to Nakamura et al, Koike, and Lu as disclosed above, Nakamura et al discloses (Figure 18) a transparent conductive layer (17) positioned on the bottom surface of the transparent substrate (14).

Regarding Claim 3,20.

In addition to Nakamura et al, Koike, and Lu as disclosed above, Nakamura et al discloses (Figure 18) the transparent conductive layer (17) is an indium tin oxide layer (Column 6, rows 40-45).

Regarding Claim 4,21.

In addition to Nakamura et al, Koike, and Lu as disclosed above, Nakamura et al discloses (Figure 18) a top alignment layer (Column 6, rows 57-62) positioned between the transparent substrate (17) and the liquid crystal layer (15).

Regarding claim 5,22.

In addition to Nakamura et al, Koike, and Lu as disclosed above, Nakamura et al discloses (Figure 18) a bottom alignment layer (Column 6, rows 57-62) positioned between the silicon substrate (13) and the liquid crystal layer (15).

Regarding Claim 6,23.

In addition to Nakamura et al, Koike, and Lu as disclosed above, Nakamura et al discloses (Figure 18) the transparent substrate (14) is a glass substrate (Column 5, rows 55-60).

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Regarding Claim 7,37.

In addition to Nakamura et al, Koike, and Lu as disclosed above, Koike discloses (Figure 13) micro color filters (37R,37G,37B) comprise a plurality of red micro color filters (37R), and a plurality of blue micro color filters (37B), and a plurality of green micro color filters (37G), each of the red micro color filters, the blue micro color filters, and the green micro color filters being positioned corresponding one of the subpixels of each of the pixels (Figure 12 shows subpixels (RGB) in a pixel).

Claim 8-11,13-17,24-30,38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al (US 6727967) and of Koike (US 20040150777) and of Lu (US 20050122464) in view of Nakano et al (US 4350729).

Regarding Claim 8,24,38.

Nakamura et al, Koike, and Lu discloses everything as disclosed above.

Nakamura et al, Koike, and Lu do not discloses the micro color filters comprise photosensitive material.

Nakano et al discloses the micro color filters comprise photosensitive material. (Column 5, Rows 5-10).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Nakamura et al, Koike, and Lu to include Nakano et al's color filter's photosensitive material, which has a chemical reaction when light strikes it thus creating a desired color filter with excellent light stability. (Column 3, Rows 30-35).

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Regarding Claim 9,25.

In addition to Nakamura et al, Koike, Lu and Nakano as disclosed above, Nakano further discloses the color filters dyes. (Column 3, Rows 5-25).

Regarding Claim 10,26.

In addition to Nakamura et al, Koike, Lu and Nakano as disclosed above, Nakano further discloses the photosensitive material are photoresist materials or photoresist resins. (Column3, Rows 34-40).

Regarding claim 11,27.

In addition to Nakamura et al, Koike, Lu and Nakano as disclosed above, Nakano further discloses each of the micro color filters comprises a plurality of optical thin films. (Column 3, Rows 18-25).

Regarding Claim 13,28.

In addition to Nakamura et al, Koike, Lu and Nakano as disclosed above, Nakano et al discloses each micro color filters is an optical thin-film stack. (Column 3, Rows 18-25).

Regarding Claim 14,29.

In addition to Nakamura et al, Koike, Lu and Nakano as disclosed above, Nakano et al discloses the optical thin-film stacks are low index optical thin-film stacks comprising silicon oxide thin films. (Column 3, Rows 18-25) and (Column 4, Table)

Regarding Claim 15,30.

In addition to Nakamura et al, Koike, Lu and Nakano as disclosed above, Nakano et al discloses the optical thin-film stacks are high index optical thin-film stacks

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comprising titanium oxide thin films or tantalum oxide thin films. (Column3, Rows 18-25) and (Column 4, Table)

Regarding Claim 16,39.

In addition to Nakamura et al, Koike, Lu and Nakano as disclosed above, Nakano et al discloses when light enters the display panel, lights of a first specific spectrum, a second specific spectrum, and a third specific spectrum are capable of passing through the corresponding micro color filters. (Column3, Rows 18-25).

Regarding Claim 17, 40

In addition to Nakamura et al, Koike, Lu and Nakano as disclosed above, Nakano et al discloses lights of the first specific spectrum, the second specific spectrum and the third specific spectrum are red, blue, and green lights respectively. (Column3, Rows 18-25).

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al (US 6727967) and of Koike (US 20040150777) and of Lu (US 20050122464) and of Nakano et al (US 4350729) in view of Iwamatsu (US 20010004108).

Regarding Claim 12.

In addition to Nakamura et al, Koike, Lu and Nakano as disclosed above, Iwamatsu (Page 8, [0067]) discloses the optical thin films are dichroic films to improve the color purity of the image displayed.

It would have been obvious to one of ordinary skilled in the art to modify Nakamura et al, Koike, Lu and Nakano's display to include Iwamatsu's dichroic films

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(Page 8, [0067]) motivated by the desire to improve the color purity of the image displayed.

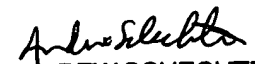
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucy P. Chien whose telephone number is 571-272-8579. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Lucy P Chien
Examiner
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ANDREW SCHECHTER
PRIMARY EXAMINER